

Analyze ----- Compare Means ----- One Sample T Test

- **One sample t-test** is a statistical procedure often performed to compares one sample mean with a specific (hypothesized) value

ئەم رىگايە بە كارىت بۇ تاقىكردنه وەى گریمانە يەك كە پەيوەستە بە ناوەندە ژميرە (mean) بۇ يەك گۆراو بۇ نمونە ئەگەر بمانە ویت گریمانەى كیش تاقىبکە يەنە وە ئایا راستە كیشەكە بەم شیوە يە ئەم هەنگاوانە جى بە جى دەكەين

Example: To test whether the average weight of student population is different from 140 lb.

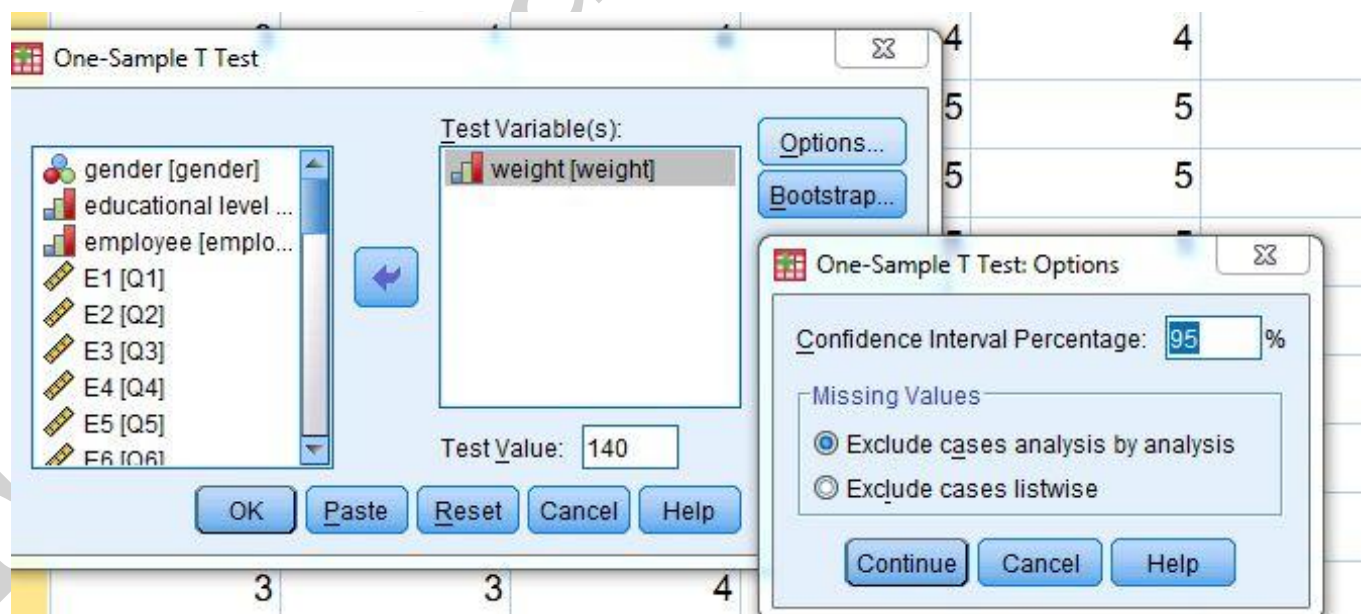
135 119 106 135 180 108 128 160 143 175 170

205 195 185 182 150 175 190 180 195 220 235

If you know mean = 140

❖ **To perform the one sample t-test:**

- **Analyze ----- Compare Means ----- One Sample T Test**
- Select the variable “**weight**” to be analyzed into the **Test Variable** box, and enter **140** into the Test Value and then click on **ok**
-



$$H_0: \mu = 140.$$

$$H_1: \mu \neq 140.$$

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Wehight of student	22	166.86	35.178	7.500

One-Sample Test

	Test Value = 140					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Weight	3.582	21	.002	26.86364	11.2668	42.4605

The one sample t-test statistic is 3.582 and the **p-value** from this statistic is **0.002** and that is less than 0.05 (the level of significance usually used for the test) Such a p-value indicates that the average weight of the sampled population is statistically significantly different from 140 lb. The 95% confidence interval estimate for the difference between the population mean weight and 140 lb is **(11.27, 42.46)**

Independent sample t test

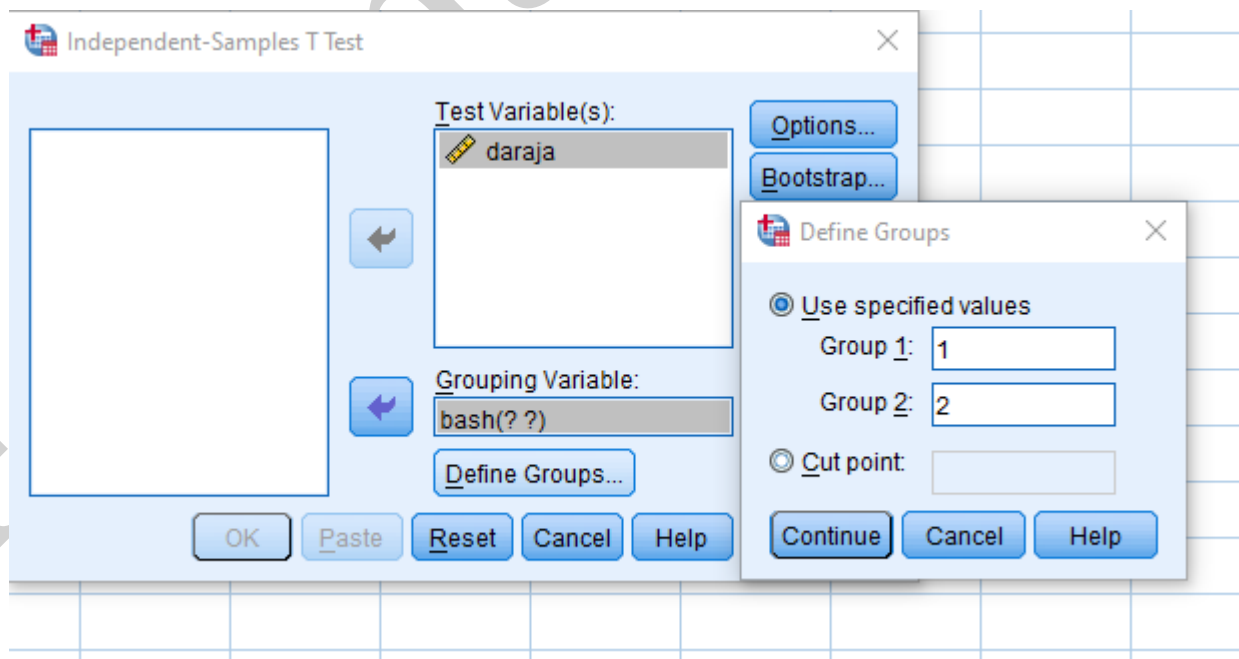
You perform an independent-samples t-test (also called a between-subjects t-test) when you want to determine if the mean value on a given target variable for one group differs from the mean value on the target variable for a different group. This test is only valid if the two groups have entirely different members. . بۆ زانینی سه‌ربه‌خۆ بوونی ناوه‌نده ژمیره‌ی دوو بژارده .

Steps an independent-samples t-test in SPSS •

- Choose **Analyze** → **Compare Means** → **Independent-sample t-test**.
- Move the target variable to the **Test variable(s)** box.
- Move the group variable to the **Grouping variable** box.
- Click the **Define groups** button.
- Enter the values corresponding to your two groups you want to compare in the boxes labeled **group 1** and **group 2**.
- Click the **Continue** button.
- Click the **OK** button.

Example\\

	bash	daraja
1	zansty	65
2	zansty	58
3	zansty	76
4	zansty	85
5	zansty	90
6	zansty	60
7	zansty	70
8	wezhaey	51
9	wezhaey	50
10	wezhaey	42
11	wezhaey	40
12	wezhaey	55
13	wezhaey	40
14	wezhaey	62
15	wezhaey	60



نەوا لە (Grouping Variable) دا ئەو گۆراوەی گە داخڵی دەگەین ئەگەر (2) کۆدی هەبوو هەردوو کۆدەگە داخڵ دەگەین بەلام ئەگەر کۆد دانەنرا بوو یان زیاتر لە (2) کۆدی هەبوو ئەوا لە (Define Groups) دا لە (Cut point) دا ناوەرپاستی ژمارەگەمان هەڵدەبژیرین یان ناوەرپاستی کۆدەگەمان داتاگە دەگات بە بچوکتەر و یەگەسان لەو ژمارەییە و گەورەتر لەو ژمارەییە.

Result

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
daraja Equal variances assumed	1.270	.280	4.045	13	.001	22.000	5.439	10.249	33.751
Equal variances not assumed			3.951	10.702	.002	22.000	5.569	9.701	34.299

تێبینی // پیش ئەوێ بەراوردی ئەنجامەکان بەگەین دەبی تێستی Levene's Test for Equality of Variances بەگەین

ئەگەر تێجاس هەبوو لە نیوان داتاگان ئەوا Equal variances assumed هەڵدەبژیرین بەلام ئەگەر تێجاس نەبوو لە نیوان داتاگە ئەوا Equal variances not assumed هەڵدەبژیرین

لەم ئەنجامەیی سەرەو دەبینین

0.001 less than 0.05 then reject Ho

Paired-samples t-test

You perform a paired samples t-test when you want to determine whether a single group of participants differs on two measured variables. Probably the most common use of this test would be to compare participants response on a measure before a manipulation to their response after a manipulation. This test works by first computing a difference score for each participant between the within-subject conditions (e.g. post-test pretest). The mean of these difference scores is then compared to zero.

بەکاریدیت بۆ بەراوردکردنی داتایەك كە پەيوەندی هەيە لە نیوان ئیستا و رابردوو واتە پيوەريك بەکاربێنین لەسەر داتایەك دواي ماوہیەك هەمان پيوەر

لەسەر هەمان داتا بەکاربێنین بزانی چ گۆرانکاریەك روویداوہ ئەم تێستە زیاتر لە بوارێ پزیشکی بەکاریدیت وەك تێستی نەخۆشیک پیش بەکارهینانی

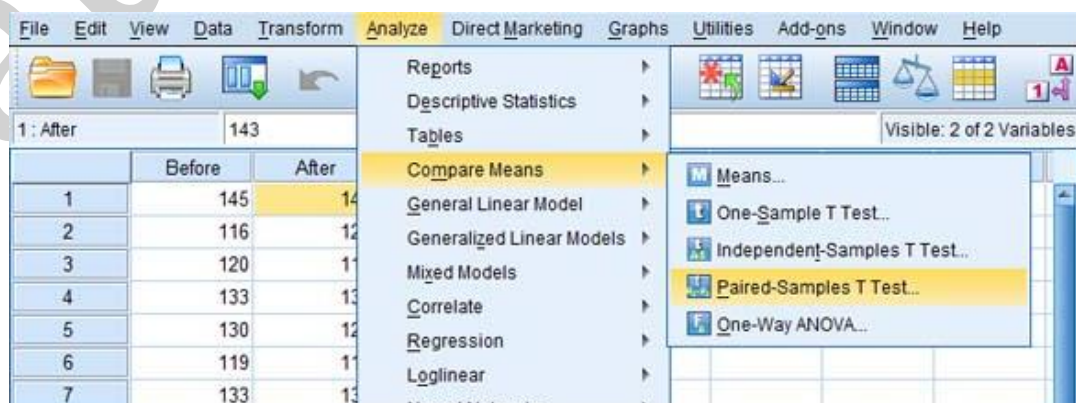
دەرمان و تێستی دواي بەکارهینای دەرمان

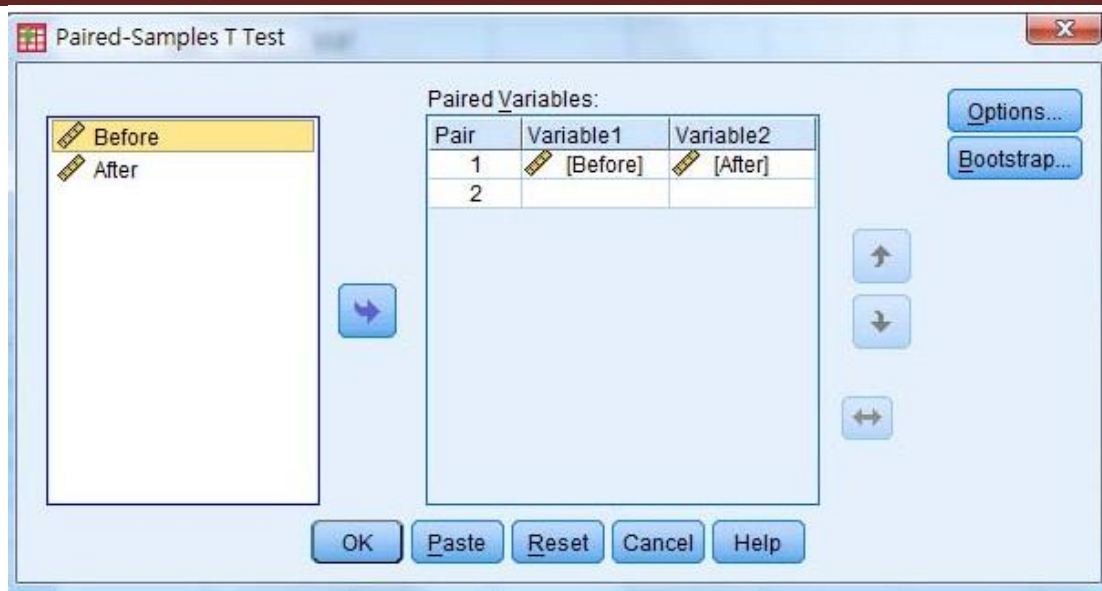
EXAMPLE\

	BEFORE	AFTER	V
1	10	25	
2	12	24	
3	14	21	
4	12	25	
5	13	23	
6	12	21	
7	15	26	
8	12	28	
9	16	25	
10	14	24	
11	12	30	
12	15	31	
13	18	28	
14	15	35	
15	18	39	
16	19	42	
17	18	49	

To perform a paired-samples t-test in SPSS

- Choose **Analyze** → **Compare Means** → **Paired-samples t-test**.
- Click the two variables you want to compare in the box on the left-hand side.
- Click the arrow button.
- Click the OK button.





RESULT

Paired Samples Test

	Paired Differences					t	Df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 BEFORE - AFTER	-14.765	6.280	1.523	-17.994	-11.536	-9.693	16	.000

p.value =0.000 less than 0.005 then reject Ho

واته نه وتیسته ی به کارمان هیناوه کاریگری معنوی هه بووه

One-way between-subjects ANOVA

A one-way between-subjects ANOVA allows you to determine if there is a relationship between a categorical independent variable (IV) and a continuous dependent variable (DV), where each subject is only in one level of the IV. To determine whether there is a relationship between the IV and the DV, a one-way between-subjects ANOVA tests whether the means of all of the groups are the same. If there are any differences among the means, we know that the value of the DV depends on the value of the IV. The IV in an ANOVA is referred to as a factor, and the different groups composing the IV are referred to as the levels of the factor. A one-way ANOVA is also sometimes called a single factor ANOVA.

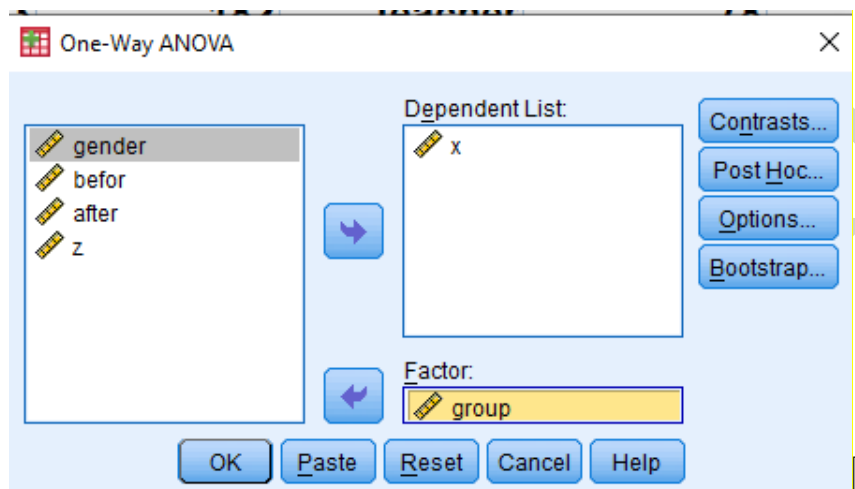
به کاردیت یو به راووردکردنی ناوه نده ژمیره ی سنی گوزاو یان زیاتر

❖ To perform the one way ANOVA

Analyze ----- Compare Means -----One Way ANOVA

$$H_0 : \mu_1 = \mu_2 = \dots = \mu_4$$

H_1 : at least two means are not equal.



Result

ANOVA

X	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	384.533	2	192.267	.578	.576
Within Groups	3993.200	12	332.767		
Total	4377.733	14			

0.576 greater than 0.005 accept H_0

***كاتيك H_0 رةتدهكهينهوه دهكهين (post hoc...) بهكاردههينين بو ئهوهى بزائين كامه گؤراوه جياوازى دروست كرديه

One-Way ANOVA: Post Hoc Multiple Comparisons

Equal Variances Assumed:

- LSD
- Bonferroni
- Sidak
- Scheffe
- R-E-G-W F
- R-E-G-W Q
- S-N-K
- Tukey
- Tukey's-b
- Duncan
- Hochberg's GT2
- Gabriel
- Waller-Duncan
- Type I/Type II Error Ratio: 100
- Dunnett
- Control Category: Last
- Test: 2-sided < Control > Control

Equal Variances Not Assumed:

- Tamhane's T2
- Dunnett's T3
- Games-Howell
- Dunnett's C

Significance level: 0.05

Factor: group

Buttons: Continue, Cancel, Help, Reset, Cancel, Help

Post Hoc Tests

Multiple Comparisons						
x LSD						
(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
teacher	center	6.000	11.537	.612	-19.14	31.14
	mixed	12.400	11.537	.304	-12.74	37.54
center	teacher	-6.000	11.537	.612	-31.14	19.14
	mixed	6.400	11.537	.589	-18.74	31.54
mixed	teacher	-12.400	11.537	.304	-37.54	12.74
	center	-6.400	11.537	.589	-31.54	18.74